AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1.-6. (cancelled).

7. (previously presented): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a color-forming component A encapsulated in heat-responsive microcapsules; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least a substantially colorless compound B, which has in one molecule a polymerizable group and a site capable of reacting with the color-forming component A to form color, and a photo-polymerization initiator.

8. (previously presented): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a color-forming component A encapsulated in heat-responsive microcapsules; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least a substantially colorless compound C capable of reacting with the color-forming component A to form color, a photo-polymerizable compound D, and a photo-polymerization initiator.

9. (previously presented): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a substantially colorless compound C that is encapsulated in heat-responsive microcapsules and is capable of reacting with a color-forming component A to form color; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least the color-forming component A, a photo-polymerizable compound D, and a photo-polymerization initiator.

10. (previously presented): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image wherein the light and heat sensitive recording material is provided with a photo-curable light and heat sensitive recording layer which contains:

an oxidant precursor E encapsulated in heat-responsive microcapsules;

an activator G outside the heat-responsive microcapsules, the activator G being capable of reacting with the oxidant precursor E to form an oxidant F; and

a dye-forming coupler H capable of coupling with the oxidant F to form a dye,

and wherein light irradiation cures an irradiated portion of the light and heat sensitive recording layer.

11. (previously presented): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image wherein the light and heat sensitive recording material is provided with a photo-curable light and heat sensitive recording layer which contains:

an oxidant precursor E outside heat-responsive microcapsules;

an activator G encapsulated in the heat-responsive microcapsules, the activator G being capable of reacting with the oxidant precursor E to form an oxidant F; and

a dye-forming coupler H capable of coupling with the oxidant F to form a dye,

and wherein light irradiation cures an irradiated portion of the light and heat sensitive recording layer. ~~12. An image-recording apparatus comprising:~~

~~a casing section which encases light and heat sensitive recording material;~~

~~an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300~~

~~to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;~~

~~a thermal developing section, downsteam of the optical recording section, which develops the latent image by heating; and~~

~~an optical fixing section, downstream of the thermal developing section, which irradiated light for fixing a developed image.~~

12.-22. (cancelled).

23. (currently amended): An image-recording apparatus comprising:

a casing section which encases light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing the developed image[;],

wherein the thermal developing apparatus comprises non-contact heating wherein the thermal developing apparatus comprises a far infrared heat source, and

wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a color-forming component A encapsulated in heat-responsive microcapsules; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least a substantially colorless compound B, which has in one molecule a polymerizable group and a site capable of reacting with the color-forming component A to form color, and a photo-polymerization initiator.

24. (previously presented): The image-recording apparatus as claimed in claim 7, wherein the optical recording section records the latent image with recording light having an intensity maximum at at least one wavelength selected from a wavelength range of 300 to 1100 nm.

25. (previously presented): The image-recording apparatus as claimed in claim 8, wherein the optical recording section records the latent image with recording light having an intensity maximum at at least one wavelength selected from a wavelength range of 300 to 1100 nm.

26. (previously presented): The image-recording apparatus as claimed in claim 9, wherein the optical recording section records the latent image with recording light having an intensity maximum at at least one wavelength selected from a wavelength range of 300 to 1100 nm.

27. (previously presented): The image-recording apparatus as claimed in claim 10, wherein the optical recording section records the latent image with recording light having an intensity maximum at at least one wavelength selected from a wavelength range of 300 to 1100 nm.

28. (previously presented): The image-recording apparatus as claimed in claim 11, wherein the optical recording section records the latent image with recording light having an

intensity maximum at at least one wavelength selected from a wavelength range of 300 to 1100 nm.

29. (cancelled).

30. (previously presented): The apparatus according to claim 7, wherein the thermal developing apparatus comprises non-contact heating.

31. (previously presented): The apparatus according to claim 8, wherein the thermal developing apparatus comprises non-contact heating.

32. (previously presented): The apparatus according to claim 9, wherein the thermal developing apparatus comprises non-contact heating.

33. (previously presented): The apparatus according to claim 10, wherein the thermal developing apparatus comprises non-contact heating.

34. (previously presented): The apparatus according to claim 11, wherein the thermal developing apparatus comprises non-contact heating.

35. (cancelled).

36. (previously presented): The image-recording apparatus as claimed in claim 23, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

37. (previously presented): The image-recording apparatus as claimed in claim 24, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

38. (previously presented): The image-recording apparatus as claimed in claim 25, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

39. (previously presented): The image-recording apparatus as claimed in claim 26, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

40. (previously presented): The image-recording apparatus as claimed in claim 27, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

41. (previously presented): The image-recording apparatus as claimed in claim 28, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

42. (cancelled).

43. (previously presented): The image-recording apparatus as claimed in claim 7, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

44. (previously presented): The image-recording apparatus as claimed in claim 8, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

45. (previously presented): The image-recording apparatus as claimed in claim 9, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

46. (previously presented): The image-recording apparatus as claimed in claim 10, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

47. (previously presented): The image-recording apparatus as claimed in claim 11, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

48. (cancelled).

49. (previously presented): The image-recording apparatus as claimed in claim 7, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

50. (previously presented): The image-recording apparatus as claimed in claim 8, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

51. (previously presented): The image-recording apparatus as claimed in claim 9, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

52. (previously presented): The image-recording apparatus as claimed in claim 10, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

53. (previously presented): The image-recording apparatus as claimed in claim 11, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

54. (cancelled).

55. (previously presented): The image-recording apparatus as claimed in claim 7, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

56. (previously presented): The image-recording apparatus as claimed in claim 8, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

57. (previously presented): The image-recording apparatus as claimed in claim 9, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

58. (previously presented): The image-recording apparatus as claimed in claim 10, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

59. (previously presented): The image-recording apparatus as claimed in claim 11, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

60. (cancelled).

61. (previously presented): The apparatus of claim 7, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

62. (previously presented): The apparatus of claim 8, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

63. (previously presented): The apparatus of claim 9, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

64. (previously presented): The apparatus of claim 10, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

65. (previously presented): The apparatus of claim 11, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

66. (cancelled).

67. (previously presented): The apparatus of claim 7, wherein the image recording relates only to processing of a single sheet.

68. (previously presented): The apparatus of claim 8, wherein the image recording relates only to processing of a single sheet.

69. (previously presented): The apparatus of claim 9, wherein the image recording relates only to processing of a single sheet.

70. (previously presented): The apparatus of claim 10, wherein the image recording relates only to processing of a single sheet.

71. (previously presented): The apparatus of claim 11, wherein the image recording relates only to processing of a single sheet.

72. (cancelled).

73. (previously presented): The image-recording apparatus as claimed in claim 23, wherein the thermal developing section develops with a heating temperature of 50 to 200°C.

74. (previously presented): The image-recording apparatus as claimed in claim 23, wherein the optical fixing section fixes with light having intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

75. (previously presented): The image-recording apparatus as claimed in claim 23, wherein the thermal developing section heats such that a range of variation with respect to a heating temperature setting is at most ±5°C.

76. (previously presented): The apparatus of claim 23, wherein the casing section, the optical recording section, the thermal developing section and the optical fixing section are arranged in a vertical configuration.

77. (previously presented): The apparatus of claim 23, wherein the image recording relates only to processing of a single sheet.

78. (previously presented): The apparatus of claim 7, wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm.

79. (previously presented): The apparatus of claim 8, wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm.

80. (previously presented): The apparatus of claim 9, wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm.

81. (previously presented): The apparatus of claim 10, wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm.

82. (previously presented): The apparatus of claim 11, wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm.

83. (cancelled).

84. (previously presented): The image-recording apparatus as claimed in claim 23, wherein the short wavelength light source is a semiconductor laser.

85. (previously presented): The image-recording apparatus as claimed in claim 78, wherein the short wavelength light source is a semiconductor laser.

86. (previously presented): The image-recording apparatus as claimed in claim 79, wherein the short wavelength light source is a semiconductor laser.

87. (previously presented): The image-recording apparatus as claimed in claim 80, wherein the short wavelength light source is a semiconductor laser.

88. (previously presented): The image-recording apparatus as claimed in claim 81, wherein the short wavelength light source is a semiconductor laser.

89. (previously presented): The image-recording apparatus as claimed in claim 82, wherein the short wavelength light source is a semiconductor laser.

90. (cancelled).

91. (previously presented): The image-recording apparatus as claimed in claim 84, wherein the semiconductor laser is a Group III element nitride semiconductor laser.

92. (previously presented): The image-recording apparatus as claimed in claim 85, wherein the semiconductor laser is a Group III element nitride semiconductor laser.

93. (previously presented): The image-recording apparatus as claimed in claim 86, wherein the semiconductor laser is a Group III element nitride semiconductor laser.

94. (previously presented): The image-recording apparatus as claimed in claim 87, wherein the semiconductor laser is a Group III element nitride semiconductor laser.

95. (previously presented): The image-recording apparatus as claimed in claim 88, wherein the semiconductor laser is a Group III element nitride semiconductor laser.

96. (previously presented): The image-recording apparatus as claimed in claim 89 wherein the semiconductor laser is a Group III element nitride semiconductor laser.

97. (currently amended): An image-recording apparatus comprising:

a casing section which encases a light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes the light and heat sensitive recording material to visible light, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiates visible light for fixing the developed image provided with a cutter after said optical fixing section,

wherein the optical recording section uses at least a short wavelength light source that has an intensity maximum in a wavelength range of 300-450 nm,

wherein the short wavelength light source is a semiconductor laser, and ~~The image-recording apparatus as claimed in claim 90,~~

wherein the semiconductor laser is a Group III element nitride semiconductor laser.

98. (previously presented): The image-recording apparatus as claimed in claim 23, wherein the optical recording section exposes, for recording the latent image, using the short wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

99. (previously presented): The image-recording apparatus as claimed in claim 78, wherein the optical recording section exposes, for recording the latent image, using the short wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

100. (previously presented): The image-recording apparatus as claimed in claim 79, wherein the optical recording section exposes, for recording the latent image, using the short wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

101. (previously presented): The image-recording apparatus as claimed in claim 80, wherein the optical recording section exposes, for recording the latent image, using the short wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

102. (previously presented): The image-recording apparatus as claimed in claim 81, wherein the optical recording section exposes, for recording the latent image, using the short

wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

103. (previously presented): The image-recording apparatus as claimed in claim 82, wherein the optical recording section exposes, for recording the latent image, using the short wavelength light source and another light source, whose intensity maximum wavelength is different from the intensity maximum of the short wavelength light source.

104. (cancelled).

105. (previously presented): The image-recording apparatus as claimed in claim 98, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

106. (previously presented): The image-recording apparatus as claimed in claim 99, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

107. (previously presented): The image-recording apparatus as claimed in claim 100, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

108. (previously presented): The image-recording apparatus as claimed in claim 101, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

109. (previously presented): The image-recording apparatus as claimed in claim 102, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

110. (previously presented): The image-recording apparatus as claimed in claim 103, wherein the other light source is selected from the group consisting of semiconductor lasers, solid state lasers, fiber lasers, wavelength conversion solid state lasers, and gas lasers.

111. (cancelled).

112. (new): An image-recording apparatus comprising:

a casing section which encases light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing the developed image,

wherein the thermal developing apparatus comprises non-contact heating wherein the thermal developing apparatus comprises a far infrared heat source, and

wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a color-forming component A encapsulated in heat-responsive microcapsules; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least a substantially colorless compound C capable of

reacting with the color-forming component A to form color, a photo-polymerizable compound D, and a photo-polymerization initiator.

113. (new): An image-recording apparatus comprising:

a casing section which encases light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing the developed image,

wherein the thermal developing apparatus comprises non-contact heating wherein the thermal developing apparatus comprises a far infrared heat source, and

wherein the light and heat sensitive recording material is provided with a light and heat sensitive recording layer containing:

a substantially colorless compound C that is encapsulated in heat-responsive microcapsules and is capable of reacting with a color-forming component A to form color; and

a photo-polymerizable composition outside the heat-responsive microcapsules, the photo-polymerizable composition including at least the color-forming component A, a photo-polymerizable compound D, and a photo-polymerization initiator.

114. (new): An image-recording apparatus comprising:

a casing section which encases light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing the developed image,

wherein the thermal developing apparatus comprises non-contact heating wherein the thermal developing apparatus comprises a far infrared heat source, and

wherein the light and heat sensitive recording material is provided with a photo-curable light and heat sensitive recording layer which contains:

an oxidant precursor E encapsulated in heat-responsive microcapsules;

an activator G outside the heat-responsive microcapsules, the activator G being capable of reacting with the oxidant precursor E to form an oxidant F; and

a dye-forming coupler H capable of coupling with the oxidant F to form a dye,

and wherein light irradiation cures an irradiated portion of the light and heat sensitive recording layer.

115. (new): An image-recording apparatus comprising:

a casing section which encases light and heat sensitive recording material;

an optical recording section, downstream of the casing section, which exposes, using at least a short wavelength light source that has an intensity maximum in a wavelength range of 300 to 450 nm, the light and heat sensitive recording material, which has been fed from the casing section, for recording a latent image;

a thermal developing section, downstream of the optical recording section, which develops the latent image by heating; and

an optical fixing section, downstream of the thermal developing section, which irradiated visible light for fixing the developed image,

wherein the thermal developing apparatus comprises non-contact heating wherein the thermal developing apparatus comprises a far infrared heat source, and

wherein the light and heat sensitive recording material is provided with a photo-curable light and heat sensitive recording layer which contains:

an oxidant precursor E outside heat-responsive microcapsules;

an activator G encapsulated in the heat-responsive microcapsules, the activator G being capable of reacting with the oxidant precursor E to form an oxidant F; and

a dye-forming coupler H capable of coupling with the oxidant F to form a dye,

and wherein light irradiation cures an irradiated portion of the light and heat sensitive recording layer.

116. (new): The image-recording apparatus as claimed in claim 112, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

117. (new): The image-recording apparatus as claimed in claim 113, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

118. (new): The image-recording apparatus as claimed in claim 114, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.

119. (new): The image-recording apparatus as claimed in claim 115, wherein a maximum irradiation energy of the recording light on the surface of the light and heat sensitive recording material is from 0.01 to 50 mJ/cm^2.